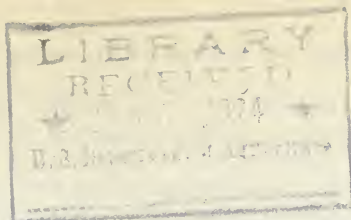


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## REPORT OF THE FEDERAL HORTICULTURAL BOARD.

UNITED STATES DEPARTMENT OF AGRICULTURE,  
FEDERAL HORTICULTURAL BOARD,  
*Washington, D. C., October 1, 1923.*

SIR: I submit herewith an executive report covering the administration of the plant quarantine act for the fiscal year ended June 30, 1923.

Respectfully,

C. L. MARLATT,  
*Chairman of Board.*

Hon. HENRY C. WALLACE,  
*Secretary of Agriculture.*

### INTRODUCTION.

A review is herein given of the more important activities of the Federal Horticultural Board in the enforcement of the plant quarantine act of August 20, 1912, including quarantine and other control of important pests under the administration of the board either directly or in cooperation with the Bureaus of Entomology and Plant Industry, enforcement of various foreign and domestic quarantines, and control and safeguarding of regulated products at ports of entry. A more detailed record of the work of the board is given in the Service and Regulatory Announcements published from time to time during the year. These announcements include the full text of all quarantines and regulations issued during the year, together with explanatory press and other statements.

With respect to the important control or eradication operations, this report brings the record down to October 1, 1923, to give, as far as possible, the complete results of the crop season. On the other hand, the records of control of imports normally coincide fairly well with the fiscal year, and the tabular records are on that basis.

### THE PINK BOLLWORM.

*Present status.*—The outstanding feature of the pink bollworm situation in the United States, October 1, 1923, is that no new infestations have been found during the year and that, except in the extreme western districts, no infestation whatever has been determined in any of the territory where the insect had previously been established. This indicates strongly the ultimate success of the effort to stamp out this important pest in the main part of the Cotton Belt. The situation is especially encouraging in Louisiana, where in the two large districts originally invaded no infestation has been found

for over two years. Similarly, in the Trinity Bay area in Texas, where in 1917 all or parts of seven counties were found infested, and also in the other minor areas in central and eastern Texas, the measures taken, namely, the cleaning of the fields and establishment of noncotton and regulated zones, have reduced the infestation to the point where only one infested boll was found in 1921 and that was in the Trinity Bay area, and none whatever in all areas in 1922, and in 1923.

No continued effort has been made to eradicate the pink bollworm in extreme western Texas and New Mexico for the reason that the proximity to the Mexican border would insure reinfestation after any noncotton period. The danger of infestation spreading from the western area into the Cotton Belt proper has, however, been greatly reduced by quarantine and the installation of disinfecting machines in all gins. These precautions, with the natural isolation of the areas affected, reduce the danger of spread from these areas of infestation to a degree not greater than that incident to the infestations in Mexico.

While the work of eradication is now in a very satisfactory condition, it would be too much to expect that there will be no reoccurrences of infestation in some of the areas where eradication has been undertaken, and it is possible that new centers of infestation may be found. The control of any future outbreaks is, however, reasonably assured by what has already been accomplished. Certainly no relaxation should be permitted in the work which is under way. Intensive field scouting must be continued and funds must be available for immediate clean-up and other repressive measures if the results which have been secured are to be retained. It is interesting to note, in the matter of comparison, that in the Laguna area, the principal cotton producing district of Mexico, where the pink bollworm has now been established upward of 10 years, it is apparently still increasing in intensity of infestation and in the amount of loss occasioned. The infestation during the past season seems to have been much more severe than in the two preceding years and the present indications are that the production will be only about half the normal crop, this result being in part, however, chargeable to the depredations of the cotton-leaf worm.

*Scouting.*—With reference to the crop of 1922, a total of 7,760 man-days of scouting was performed. Seventy-one per cent of the time was spent in Texas, 16 per cent in Louisiana, and 13 per cent in other States and in Mexico. One thousand five hundred and eighty-nine fields in 219 localities, with a total area of 88,120 acres, were examined. These fields were carefully selected with reference to previous infestations or to known risk from seed or other reasons. The most useful scouting period includes the months of September to January or February, and this work, therefore, in connection with the crop of 1923, is, at this writing, in full progress.

As a part of the protection maintained as to reinfestation from Mexico, a border inspection was made in Mexico that included practically every field along the Rio Grande from a point opposite Del Rio to the mouth of the river, and no infestation was determined. This range of inspection included the San Carlos district opposite Del Rio and the fields in the Allende district about 40 miles southwest of Eagle Pass, Tex., where the pink bollworm was found



several years ago, but as noted without finding any field infestation.

*Clean-up.*—During 1922, 13,405 acres of cotton land were cleaned at a total cost of \$26,156.24. These fields were at Ennis, Marilee, and Liberty, Tex., and Shreveport, La. In each case the area cleaned was immediately adjoining noncotton zones. So far there has developed very minor need for cleanup work of this kind in connection with the crop of 1923. A comparatively small area will, however, be cleaned as an additional precaution in the case of quarantined areas at Ennis and Marilee.

Since the inauguration of the work in 1917, 53,042 acres have been cleaned at a total cost to the department of \$395,988.14. Undoubtedly this work has been the most important single factor in bringing about the eradication of the insect.

*Progress in disinfecting cottonseed.*—The installation of disinfecting machines at gins in regulated zones was begun in 1921 and continued in 1922–23. In 1922, 37 of these machines were in operation, treating about 35,000 tons of seed at a cost of from 10 to 25 cents per ton. These machines are installed so that the disinfection of the seed becomes automatically a part of the process of handling at the gins. Since by far the most important agency in the dissemination of the pink bollworm is cottonseed, the installation of this disinfecting system in all areas under suspicion is one of the most important protective measures which has ever been taken. It has proved possible to subject the seed under practical conditions to a temperature which will destroy the pink bollworm and not in any degree affect germination.

The disinfection of seed is not a complete local protection from the pink bollworm, as a certain amount of infestation remains in the field. Nevertheless, disinfection at the gins undoubtedly destroys the great majority of the insects present and eliminates the danger of the carriage of infestation by the agency of seed over long distances, and this has been one of the principal dangers which has confronted the department in its fight against the pink bollworm.

*Revision of regulations.*—Effective on June 1, 1923, the quarantine on account of the pink bollworm was materially revised to cover necessary changes in the quarantined areas and to simplify the administration. Under this revision the amount of strictly regulatory work, such as the issuing of permits, will be greatly reduced, and a number of men will be released for the essential work of field inspections. In the calendar year 1922, 10,701 permits were issued. The new regulations will reduce the number by more than 50 per cent but without reducing the efficiency of the protective measures.

*New legislation in New Mexico.*—A decided forward step was taken by New Mexico in passing a law (March 7, 1923) licensing gins and requiring as a condition of the issuance of the license the installation of an approved seed-disinfecting machine. In other States this is accomplished through regulations under general laws, but there is considerable advantage in having a direct statutory provision on the matter.

*Research in Mexico.*—The research work on the pink bollworm in the Laguna district, Mexico, was continued with headquarters as heretofore at Tlahualilo. One phase of this work dealt with experiments and observations on the reaction of various cotton varieties

to the pink bollworm. The indication obtained in previous work that a considerable number of larvæ can be killed by the application of poison was followed up with detailed tests in the field and laboratory. Different poisons were used and different methods of application tested. A very noticeable degree of reduction in the number of larvæ in the bolls was obtained, but many details remain to be worked out before a decision can be reached as to the practical usefulness of poisons. It is safe to say, however, that the indications for a successful outcome are at least as good as they were in the case of the cotton boll weevil as recently as eight years ago. The amount of control of the insect which can be secured through different methods of tillage and different systems of handling the water for irrigation was studied. On account of the seasonal and other variations from year to year, it is necessary to continue work of this kind for a series of years before exact knowledge is gained. Other lines of observation dealt with the distance of flight of the pink bollworm moth, the condition under which plants other than cotton are attacked, the thermal death point of larvæ, and the effect of conditions of seed storage on larvæ longevity. A bulletin dealing with the results obtained has been submitted for publication.

#### MEXICAN BORDER CONTROL.

The border control to prevent the reentry of the pink bollworm from Mexico into the cotton fields of the South has been continued on the Texas-Mexican border. This service was organized primarily to safeguard the cotton industry, but the inspectors also assist in enforcing all quarantines which relate to plants and plant products, the entry of which from Mexico is prohibited or regulated.

During the fiscal year ending June 30, 1923, 23,132 freight cars were inspected on the Mexican side of the border for cottonseed, and of this number 13,719 were fumigated in houses constructed for the purpose as a condition of entry by representatives of the board. Fumigation fees amounting to \$54,128 were collected and turned into the Treasury. At Del Rio, where there are no railroads entering Mexico, 23,694 vehicles crossing the border were inspected. Fifty-two of these vehicles were found to be contaminated with cottonseed and after a thorough cleaning were, as an additional precaution, fumigated, for which fees amounting to \$26 were collected and turned into the Treasury.

A fire originating in the tanks of a local oil company on July 19, 1922, resulted in the total destruction of the 15-car fumigation house located at Laredo, Tex. In the absence of a fumigation house, it was necessary to fumigate the interior of all box cars and to spray all flat cars and gondolas. In view of the increase in the number of cars crossing the border at this point during the fiscal year 1922, it was deemed desirable to construct a 20-car house. This house was completed at a cost of approximately \$45,000 and put into operation on May 4, 1923.

As in the past, inspectors of the Federal Horticultural Board have been cooperating with customs officials in the inspection at footbridges to prevent the entry of contraband plants and plant products. This cooperation exists at Brownsville, Laredo, Eagle Pass, Del



Rio, and El Paso, Tex., as well as on the boundary line at Nogales, Ariz. During the period under review many interceptions were made of contraband material, some of which was infested with exotic insects injurious to cultivated fruits and crops. The value of this phase of the border work is evidenced by the fact that 33,636 pieces of contraband plants and plant products were taken from passengers and pedestrians entering the States.

#### EUROPEAN CORN BORER.

The domestic quarantine on account of the European corn borer was amended four times during the year to include such extensions of territory as were determined from time to time. (See record on p. 31.) These extensions have all been in connection with old districts and represent the natural and, in large part, unpreventable local spread of the pest. There have been no reports of new centers of infestation remote from the old known centers.

The corn borer quarantine and regulations have been modified as to the New England district, so that more funds could be devoted and more work could be done in western New York, northern Ohio, and some areas in Michigan immediately adjacent to Detroit, where the invasion of this pest comes closest to the great Corn Belt of the Middle West.

The inspection and certification which was formerly carried out at the point of origin of the products and applied to all marketed products, is now limited to products which are to be shipped out of the quarantined area, and this is done very largely in the Boston wholesale market. This change makes a saving of approximately two-thirds in the cost of inspection in this district—a reduction from approximately \$75,000 to \$25,000. It has been necessary, however, to maintain some inspection and certification at outlying points for the inspection of ornamentals and vegetables which are shipped interstate directly from the point of production—farm or nursery.

The inspection for the eastern New York district is conducted in the wholesale markets in Albany, N. Y., and is limited to the inspection and certification of sweet corn grown outside of the quarantined area but which comes into Albany for shipment interstate or otherwise to points beyond the quarantine line. The inspection in the western New York area is limited largely to the required certification of products as a condition of movement into Canada, inasmuch as there is little other movement out of the district. For the Ohio and Michigan areas inspection has been maintained in the Cleveland markets to safeguard the movement of corn beyond the quarantined area chiefly into the southern markets of Ohio. Inspectors are also stationed in Michigan at Detroit and other ports of entry from Canada within the quarantined area to prevent the entry of quarantined products from Canada which have not been certified by Canadian officials. The main highways leading out of these western quarantined areas have been under supervision and inspection to prevent sweet corn on the cob from being carried out of the quarantined area in motors or other vehicles. In addition to this work, field inspections have been conducted around all the infested areas to determine the spread of the insect for the purpose of rectifying the quarantine lines.

The inspection and quarantine work in both the eastern and western areas has been on a cooperative basis with the States concerned.

#### RESTRICTIONS ON ENTRY OF BROOMCORN.

For several years the entry of foreign broomcorn has been safeguarded by requiring the steam disinfection of all such corn at ports of entry, this treatment being necessitated by the fact that in spite of such efforts as have been made on the part of foreign shippers to select and export sound material, all broomcorn coming to the United States has been more or less infested with the larvæ of the European or other corn borers. Practically all such imports have been from Europe, but broomcorn from other parts of the world has indicated a similar danger of carrying stalk borers new to the United States.

Early in February, 1923, in view of the unusually large imports of broomcorn in prospect, it seemed desirable to limit entry to the period between November 1 and March 31 of each year so that any risk from delay in fumigation would be further safeguarded by the fact that the insect would still be in a dormant winter condition.

Due to the shortage of production in the United States, the entry of broomcorn exceeded all previous records and the supply awaiting fumigation and in transit as March 31 approached was such as to make it apparent that it could not be disinfected and disposed of by that period. It became necessary, therefore, to order the removal or transfer of some of this corn from the port of New York by lighterage to Boston, where further delay in its disinfection would involve no new risk to the United States.

In view of the generally unsatisfactory situation which developed in March and April at the port of New York on account of the great quantities of broomcorn entered and the delays in its disinfection, the provision for the entry of this product was again changed, limiting entry at New York, San Francisco, and any other port where sterilization is possible, to the period between November 1 and February 28 of each year, but permitting entry throughout the year at Boston. Any broomcorn arriving at New York or other port except Boston subsequent to February 28 and prior to November 1 will be required to be immediately transferred to Boston by lighterage or other means and without being unloaded on the New York docks.

#### JAPANESE BEETLE QUARANTINE.

The quarantine on account of the Japanese beetle was entirely revised, effective April 15. This revision was based on a conference held by the Federal Horticultural Board and Bureau of Entomology October 12, 1922, participated in by the official representatives of New Jersey and Pennsylvania. A new policy in control methods was agreed upon at this conference, involving what is termed the "zoning system." Under this system the city of Philadelphia and its suburbs are now included within the controlled area so as to allow free movement of locally produced farm products within the more important distribution radius from Philadelphia. In point of fact, the Japanese beetle has already extended its range to include



most of the city of Philadelphia and a considerable portion of the outlying district.

The adoption of the zoning system has made it possible with the funds provided by Congress, with the support of State funds, to carry out the control now provided for in these revised regulations. The increase in the Japanese beetle area made it impossible to carry out the old plan of inspection of all controlled products on the farm or place of origin. The zoning plan of control is capable of extension from time to time to take up further spread of the beetle. No other plan seems to be feasible which would not involve an expense beyond any probable appropriation by Congress or the States concerned.

The increase and spread of the Japanese beetle and the nature of its depredations have demonstrated that this pest is one of the most dangerous insect introductions which has ever occurred in this country. It threatens enormous future losses, particularly to fruit and forage crops. It is recognized that eradication is impossible, and that ultimately the pest is bound to spread widely in the United States. The principal means of long-distance spread of this pest is in connection with the movement of various farm and truck crops and fruits and florist and ornamental stock. Its natural spread by flight seems to be from 5 to 10 miles per year and the object of quarantine restrictions on carrying products is to restrain its spread by long jumps by such agencies until means of artificial control can be developed or until control is brought about by the introduction and establishment of natural enemies.

#### GIPSY MOTH AND BROWN-TAIL MOTH QUARANTINE.

The quarantine on account of the gipsy moth and the brown-tail moth was amended effective July 1, 1923, to cover the additions or reductions of territory.

This quarantine was again amended August 21, 1923, immediately effective, to give greater security to the inspection of nursery stock moving out of the quarantine district. A considerable increase of infestation had been allowed to develop in some of the nurseries of the district, and particularly in the case of evergreens, the inspection of such stock and an attempt to remove egg masses or other stages of these pests, and especially the gipsy moth, involves a risk of overlooking infestation which can not be entirely obviated. Inasmuch as a good deal of this increased infestation was evidently due to the laxity or indifference on the part of the owners, it seemed to be desirable to further safeguard the situation by considering the plan of refusing to certify stock for movement out of the invaded districts from nurseries which are palpably infested with these pests. For the discussion of this proposition a conference was held with nurserymen and State and other authorities and persons in interest at the State House, Boston, Mass., August 17, 1923. As a result of the discussion the nurserymen themselves heartily agreed to the desirability of a regulation of this kind, realizing that their own status with their clients would thereby be greatly improved. To carry out this idea regulation 7 of Quarantine 45 was amended to provide that whenever any nursery in the gipsy moth or brown-tail moth area is reported by a State inspector to be appreciably infested with

either the gipsy moth or the brown-tail moth, or whenever such infestation is determined by a Federal inspector on his examination of shipments from such nursery, further certification for interstate movement from that nursery will be refused until after the close of the next gipsy moth egg-laying season, unless and until such nursery has been inspected and certified by the State to be apparently clean.

As hitherto, no quarantine has been declared to cover the determined areas of infestation in New Jersey and New York resulting from the central colony at Somerville, N. J., in appreciation of the fact that the quarantine and control operations enforced as they are by these two States in cooperation with and largely under the direction of the experts of the Bureau of Entomology of the department have been apparently fully adequate.

#### DATE-SCALE ERADICATION.

In connection with the *Parlatoria* date-scale eradication work of 1923, it has been possible for the first time to bring all the date plantings known to be infested under adequate treatment, including the thorough pruning and burning of all infested trees. A close follow-up inspection is now being maintained and must be continued for each infested orchard for two or three years after the last infested tree has been found and cleaned up to make sure that this pest is completely eradicated.

By arrangement between the Federal Horticultural Board and the Bureau of Plant Industry, date palms imported from abroad are being established in nurseries to remain under the control of the department for from 15 to 20 years. The offshoots produced by these imported palms, however, will be sold to the public as soon as they are considered free from *Parlatoria*. This policy has resulted in the establishment of some six quarantined nurseries in California and Arizona in which are planted the 10,000 date offshoots imported from Algeria and Egypt in 1920, 1921, and 1922. These nurseries will be cleaned up as thoroughly as possible and the offshoots removed from them and disposed of for planting in date orchards. The latter will be kept under inspection for two or three years to determine their complete freedom from pests.

As has been emphasized in previous reports, it is the belief of the horticultural experts in charge of the development of date culture in this country that this industry can not hope to become and continue a profitable one unless the *Parlatoria* scale is eradicated. It is their belief, however, that if the present campaign of eradication is continued for a few years its ultimate complete success is assured.

The second of the two scales which seriously affect date plantings in the United States and date cultures of the Old World is the so-called *Phoenicococcus*, or red date scale, which up to the present time has been considered to be too deeply seated beneath the overlapping bases of the leaves of the plant to make its eradication possible, and control measures only have been used against it. The *Phoenicococcus* scale is, however, much easier of practical orchard control than is the *Parlatoria* scale and date culture can be carried on without serious difficulty even if the former is present. The possibility, however, of eradicating the *Phoenicococcus* scale



has been indicated by the experience of the last year or two, and it is now believed that at least important districts can be established in this country which will be free from both the *Phoenicococcus* and the *Parlatoria* scales. Such scale-free districts would offer important future possibilities in the way of foreign trade in the exportation of date offshoots as, for example, in the case of the possible date culture which may later develop in Australia and South Africa. At present these countries are unable to obtain scale-free offshoots on account of strict quarantine laws enforced by them which exclude all date offshoots from the date countries of the Old World.

#### REVISION OF HAWAIIAN FRUIT-FLY QUARANTINE.

The quarantine of Hawaii on account of the Mediterranean fruit fly and the melon fly was revised, effective December 1, 1922, to make more explicit the inspection requirement of vessels, cargo, etc., at ports of arrival in the United States. The new restrictions make specific provision for the boarding and inspection of vessels at quarantine by department inspectors. If such vessels are found to be fouled with fruit-fly larvæ, pupæ, etc., or to contain any contraband fruits and vegetables, such material must be destroyed and the vessel must be disinfected before leaving the quarantine area. The new regulations provide specifically also for the inspection of baggage and cargo on the dock, making possible greater efficiency and safety.

#### THE CAMPHOR SCALE.

The placing of a Federal quarantine on Louisiana and Alabama to prevent the spread of the so-called camphor scale, a newly discovered crop insect pest, was considered at a public hearing held in Washington, November 20, 1922. As a result of this hearing the board decided not to recommend a Federal quarantine at that time on account of this scale pest, for the reasons indicated below. Representations were also made by officials of the invaded States that the safeguards which these States were maintaining or which they proposed to maintain in the future would control the distribution of the pest as efficiently as could probably be accomplished under Federal quarantine.

The information brought out at this hearing as to the spread of this pest was believed to be not sufficiently adequate and dependable to enable the establishment of a Federal quarantine. Furthermore, prior to the discovery of this scale, shipments of nursery stock and plants had been made widely throughout the United States from New Orleans nurseries, furnishing abundant opportunity for the dissemination of this scale pest. Further and perhaps even broader opportunity for similar wide distribution is indicated by the discovery, subsequent to the hearing, of the long establishment of this pest in Texas, discussed below.

The need of Federal action is much lessened also by the fact that the two States most concerned in the menace of this scale to the citrus culture—Florida and California—are now enforcing quarantines against citrus and other carrying plants from the invaded States.

The Department of Agriculture, through the Bureau of Entomology, however, proposes to cooperate with the States where the



pest is now more or less established for the purpose of aiding these States in the local control to prevent spread, particularly with respect to the inspection and disinfection of commercial or other shipments of fruit or nursery stock originating in the invaded areas.

The present status in Mississippi, as brought out at the hearing on November 20, would seem to indicate that the few points of invasion have been completely cleaned up and that this scale is probably not now present in that State. A State quarantine is being enforced to prevent further entry of the scale.

In Louisiana control work has been largely limited to the city and immediate vicinity of New Orleans, which is the district known to be principally invaded. Control of shipments out of this district is being enforced under State authority and the State and city are spending a good deal of money, in cooperation with the Bureau of Entomology, in local clean-up and repression. The State promises to extend control to all points known to be invaded outside of the New Orleans district.

The Alabama authorities report that steps have already been taken to provide for control measures and have given assurances that such control will be promptly instituted. The invaded district is a very small one in that State, limited so far as now known to the citrus development (Satsuma oranges) in the Grand Bay district near Mobile. The control of this pest, therefore, as to that district is of vital importance to other portions of Alabama as well as in relation to interstate shipments of fruit or plants originating in the invaded district.

Reference has already been made to the existence for a considerable period of the camphor scale in Texas. In May, 1923, an inspector of the Bureau of Entomology traced an infestation in the Grand Bay district, Alabama, to Satsuma orange and fig trees obtained some 12 years before from a Japanese nursery at Alvin, Tex. An inspection of this nursery made shortly afterwards showed that the property—some 300 acres—now abandoned as a nursery but still containing some 10,000 camphor trees, was scatteringly infested throughout with the camphor scale. This nursery was started in 1907, importing its citrus stock directly from Japan, indicating clearly the source of origin of the scale. In fact, the importations for this nursery may have been the original and chief means of introducing this scale pest into the United States. A good deal of the stock of this nursery, on or prior to its abandonment in 1919, was removed to another Japanese nursery at Genoa, Tex., and other material went to a nursery at Beaumont, and still other material was variously distributed to Houston and elsewhere and to States as remote from the center as Colorado and Massachusetts. During the 12-year period of the operation of the nursery at Alvin, it was the source of distribution of orange, fig, camphor, and other trees not only widely in Texas, but in other States. The State of Texas has taken no steps to clean this property, now used as a stock ranch, nor to make any inspections to determine the possible establishment of this pest elsewhere in the State—representing that it has no available men or funds for such work. A survey is now being conducted by the Bureau of Entomology of this department under the camphor scale appropriation to determine in a general

way the spread of this scale, in Texas and other Southern States, through the agency of the Alvin, New Orleans, and other nurseries.

The camphor scale is a new pest to the United States. It apparently gained entry and establishment just prior to the passage of the plant quarantine act, and therefore before there was any Federal authority to safeguard the entry of the plants responsible for its introduction. The origin of this scale in Alabama is apparently traceable to very large importations of trifoliolate oranges direct from Japan in 1911. The infestation at New Orleans may have resulted from some distribution of a portion of this importation, if not from some independent importation of plants from Japan about the same time. It took nearly 10 years for this scale to develop in sufficient abundance to attract notice, but some three years ago its injury to camphor trees in New Orleans became serious, and the scale was found to be widely disseminated within the city on a long list of host plants. The city and State immediately undertook an effort to control and, if possible, to eradicate it, and have already spent upward of \$30,000 in such work.

The determination of infestation in Alabama, near Mobile, was made in 1921 in orchards of Satsuma oranges grafted on the imported trifoliolate stock. The work of this scale in these orchards indicates the serious menace which it presents to the citrus cultures in this country, in addition to its previously known importance as attacking camphor and many other ornamental plants as well as various deciduous fruits, such as olive, persimmon, fig, plum, and pecan.

#### POTATO WART.

The known distribution of the potato wart in Pennsylvania, West Virginia, and Maryland remains unchanged. No further survey has been conducted, but dependence has been placed on collaborators in the plant-disease survey of the Bureau of Plant Industry and on county agents and other agricultural correspondents to report any new points of infection.

Two modifications of the Pennsylvania quarantine have been put into effect, as follows:

An amendment to the State quarantine law makes it possible for quarantine inspectors to confiscate and destroy any potato plants of other than approved immune varieties which are found in the quarantined areas. This has enabled the inspectors to begin their work in June, as soon as varietal characteristics are evident, and to remove susceptible plants before infection occurs. Previously it has been necessary to prove that the plant is infected before it could be removed, and usually this could be done only after the infection had progressed to such a stage that a new crop of resting spores of the parasite had been released into the soil, thus prolonging the latent existence of the disease.

Due to widespread dissatisfaction of the commercial potato growers in the agricultural districts surrounding the Freeland infested area with the immune varieties which they were required to grow, particularly the Green Mountain variety on account of its susceptibility to common scab, the requirement of planting only immune varieties in this "safety zone" was temporarily withdrawn. The prevalence of scab in the Green Mountain variety was in part due



to the use of lime in their potato fields by these growers, and in part to climatic conditions specially favorable to scab. In respect to yield and market quality this variety continued to be very satisfactory. This difficulty with potato scab serves to illustrate the fact that it is not yet possible to safeguard all our potato-growing sections against the introduction and spread of wart by the use of immune varieties without placing a severe burden on the growers in certain sections for which well-adapted immune sorts have not been determined. The release of the "safety zone" from the requirement of immune planting has resulted in an extensive return to the growing of the highly wart-susceptible Russet-Rural variety. Special measures are being taken by the State department of agriculture to insure thorough inspection at digging time of all such plantings. This experiment, if it may be so called, should at least give additional and positive information regarding the distribution of the disease, if any, beyond the old determined areas of infestation.

In Maryland the furnishing of an approved immune variety of potato for planting in infested gardens was undertaken by the State, with the result that all the known infested gardens in which potatoes were grown this year were planted to a pure stock of Irish Cobblers.

As a result of the experience that has been acquired and the studies that have been made on potato wart since its discovery in Pennsylvania five years ago, it is the belief of the specialists that American potato culture is not seriously threatened by the disease. It is their belief that if the growth of immune varieties can be enforced for a period of years, as now seems possible under State quarantines, there is reasonable hope of entirely eliminating potato wart from this country within no great period of years and at no great cost either to the States concerned or to the growers in areas under quarantine. It is still highly important that accurate information as to the distribution of the disease, particularly as regards its appearance in new areas, be secured, and the strict use of only immune potatoes in all infested gardens must be enforced.

Investigational work complete and published, or nearing completion, affords a sound basis for determining the future attitude which the Department of Agriculture may take toward this disease. The conditions of infection and the factors operative in dispersal and elimination of the parasite have been worked out to reasonable completeness. The application of soil sterilization to the problem of wart extermination has been investigated and new information has been secured regarding the use of heat and chemicals for this purpose. There remain several scientific questions of importance and great interest which will receive further attention in the Bureau of Plant Industry.

#### WHITE PINE BLISTER RUST QUARANTINES.

Following up the quarantine of certain counties of Washington lying west of the summit of the Cascade Mountains, promulgated March 15, 1922, on account of the discovery by agents of the Department of Agriculture of several blister-rust infestations, principally on black currants, in the Puget Sound region of Washington, it became necessary in March of this year to extend this quarantine to cover the entire State. This action followed an amendment to the



quarantine promulgated by the State permitting the intrastate movement from licensed and inspected nurseries of all currants (except cultivated black currants) and gooseberries from the territory theretofore under quarantine west of the Cascade Mountains. The need for maintaining as thoroughgoing quarantine protection as possible in this region is to prevent the spread of the disease to the very valuable commercial stand of western white and sugar pine forests of the Rocky Mountain and Pacific coast regions.

The board is now enforcing two domestic quarantines on the subject of the white pine blister rust. These are Nos. 26 and 54, the latter covering Washington, as just discussed. Quarantine No. 26 as now amended prohibits the interstate movement of five-leaved pines, currant, and gooseberry plants from all of the States east of and including the States of Minnesota, Iowa, Missouri, Arkansas, and Louisiana to points west of these States. Within this large quarantined area two supplemental quarantine districts have been established, the first covering all of the New England States and New York, for the protection of the States within the larger quarantined area lying west of this group in which the pine blister rust is either not established or has very limited foothold, and the second to protect New York from the New England States on account of the fact that New York is making a thoroughgoing effort to eradicate this disease within her boundaries.

The enforcement of these quarantines is carried out by inspectors working under the direction of the Bureau of Plant Industry, in cooperation with the board, and with the Post Office Department, State officials, common carriers, and the nurserymen concerned.

#### BLACK STEM RUST OF WHEAT.

In connection with the campaign for the eradication of the common barberry for the purpose of controlling epidemics of black stem rust on wheat, Quarantine No. 38 was promulgated, effective May 1, 1919, prohibiting the shipment of the common barberry from any State in which black stem rust occurred into any one of the 13 States comprising the eradication area, namely, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming. During the past year there have been but very few records of infractions of this quarantine, and, in general, the nurserymen have cooperated in making this quarantine effective. It should be especially noted that the campaign is directed solely toward the eradication of the common barberry and that the Japanese barberry is harmless and its use to supplant the common barberry as an ornamental is encouraged.

From the beginning of the campaign to June 30, 1923, almost all cities, towns, and villages in the 13 States have been surveyed. The original survey was completed in Wyoming, and but few counties remain to be covered in Colorado and Montana. The survey in the other 10 States progressed rapidly and an area equivalent to 484 counties was covered. From time to time resurveys are made of each property on which barberries have been found, and properties in the vicinity of large bushes, either cultivated or escaped, which are old enough to bear seeds, have been designated for especially careful resurvey the next season.

### PADDY RICE QUARANTINE.

The advisability of prohibiting or restricting the entry of seed or paddy rice from all foreign countries and localities not already covered by quarantine was considered at a public hearing held in Washington June 11, 1923. The reason for this consideration is the danger of entry of injurious plant diseases and insect pests with unhulled or paddy rice. The principal rice-producing or exporting countries of the world had already been covered in Quarantine No. 39 on account of flag smut and take-all diseases, but occasional shipments of paddy rice were being offered for entry into the United States from China and other countries not then covered by quarantine, and it seemed desirable therefore to consider the extension of the quarantine referred to to control the entry of paddy rice from all foreign countries. It was brought out at the hearing that the rice industry of Mexico is much of it of recent origin; that the rice cultures of Mexico are apparently free from the diseases which are known to occur in other foreign countries; and that there is a considerable demand for Mexican paddy or seed rice for planting in the United States. As a result of this showing the quarantine as subsequently promulgated July 17, 1923, makes provision for the entry of seed or paddy rice from Mexico under adequate safeguards.

It may be noted that the restrictions which are now being enforced on the entry of seed rice leave open to free entry into the United States foreign hulled rice for food purposes.

### NURSERY STOCK, PLANT, AND SEED QUARANTINE.

#### BULB CONFERENCE.

Supplementary to the plant quarantine conference of May 15, 1922, which was called to consider the various provisions of Quarantine 37, a conference was held on October 30 of the same year to consider the subject of bulb importations. As a result of this conference regulation 3 of Quarantine 37 was amended to permit the unlimited entry for a period not to exceed three years from January 1, 1923, of the following additional bulbs:

- Chionodoxa (glory-of-the-snow).
- Galanthus (snowdrop).
- Scilla (squill).
- Fritillaria imperialis* (crown imperial).
- Fritillaria meleagris* (guineahen-flower).
- Muscari (grape hyacinth).
- Ixia.
- Eranthis (winter aconite).

The termination at the end of a period not to exceed three years of the unlimited entry of narcissus bulbs was also authorized.

#### REVISION OF FREEDOM FROM SOIL REQUIREMENT.

An informal conference between the Federal Horticultural Board and the advisory committee of the American Association of Nurserymen was held on October 3, 1922. It was represented by the conferees that the washing of the roots, particularly of certain classes of plants, as performed abroad was a source of injury to importa-



tions and the cause of considerable losses. Many instances of such injury were presented. On the other hand, it was brought out that this injury was often due to careless methods of washing and also to harmful methods of packing and shipping. It was shown that such washing had been done by some exporters without any injury whatever to classes of plants which were supposed to be most susceptible to such injury. Nevertheless, the importers were convinced that it would be more practicable to permit the removal of earth by shaking or other means where such removal could be thus effectively accomplished. As a result of this discussion the board agreed to modify that portion of regulation 7 of Quarantine 37 which relates to freedom from sand, soil, and earth as follows:

All nursery stock and other plants and seeds offered for import must be free from sand, soil, or earth, and all plant roots, rhizomes, tubers, etc., must be freed by washing or other means from such sand, soil, or earth, and must be so certified by the duly authorized inspector of the country of origin.

#### PERSONAL LIABILITY AGREEMENT REPLACES BOND.

At a conference held with a committee representing the orchid collectors and growers, the one important suggestion made by the chairman of this committee was that a liability agreement would probably serve the purpose of the bond which has hitherto been required in connection with all permits issued under regulation 14 of Quarantine 37. This suggestion was taken up with the Solicitor of the department and the board was advised that a properly worded liability agreement would give essentially the same protection which the bond was designed to afford. The liability agreement was accordingly drafted by the solicitor and has replaced the bond in connection with special permits. The liability agreement is a personal agreement, duly witnessed, and eliminates the expense formerly connected with the bonding system. (For record of importations of nursery stock, plants, and seeds under this quarantine, see pp. 22-25 and Tables 1-6.)

#### COTTON AND COTTON PRODUCTS QUARANTINES.

On February 24, 1923, the rules and regulations governing the importation of cotton into the United States were revised. Under that revision added safeguards were placed on the disinfection of imported cotton and all restrictions on its subsequent distribution and use were lifted. Automatically all licenses previously issued for the handling and use of foreign cotton were canceled. This releases from all restrictions as to the use of foreign cotton hundreds of spinning and other cotton mills and other establishments.

In response to numerous requests from cotton importers, the board requested the Post Office Department to open the mails for the importation of cotton and cotton waste samples when sent by parcel post addressed to the United States Department of Agriculture, Federal Horticultural Board, either at Washington, D. C., or Ferry Building, San Francisco, Calif., with the name and address of the ultimate consignee indicated in the lower left-hand corner. This request was complied with in a Post Office order under date of November 18, 1922. As a result of this order, 6,064 mail packages were received for inspection, disinfection, and redistribution in Washington, and 100 packages at the board's office in San Francisco.



In addition to these mail entries, 336 packages of cotton and cotton waste samples were received by freight and express.

The restrictions on the entry of cottonseed, seed cotton, and cottonseed products continue unchanged.

In March a disinfection plant was put into operation at Portland, Oreg. This permitted the opening of that port for cotton and cotton waste requiring disinfection. Provision was also made for the entry of waste not requiring disinfection at Norfolk, Charleston, Savannah, Galveston, St. Albans, Buffalo, Rouses Point, and Portland, Me.

Cotton lint has been under restriction since 1915—eight years. The total number of bales entered this fiscal year is 481,396, an increase over last year's importation of more than 95,000 bales. This is the second largest yearly importation of cotton lint on record. For comparative purposes there is listed below the importations for the past eight years in the order of the quantities imported:

Year:	Bales.	Year:	Bales.
1919-20-----	595,765	1920-21-----	221,303
1922-23-----	481,396	1916-17-----	216,337
1921-22-----	386,303	1917-18-----	195,723
1915-16-----	316,260	1918-19-----	179,537

This year's importations of cotton, cotton waste, and bagging total 825,438 bales and make the largest yearly combined entry of these commodities since they were placed under restriction. They exceed the next largest year by nearly 50,000 bales. A tremendous increase over last year's importations is shown in each commodity.

Disinfection as a condition of entry is required as to the bulk of these products and entry under disinfection is, therefore, restricted to the ports of Boston, New York, San Francisco, Seattle, and Portland, Oreg., where disinfection plants under private ownership and management, but under the supervision of Federal inspectors, are located. Provision is made under the quarantine for the entry of certain cotton and cotton waste and bagging without disinfection where, from the origin, condition, or treatment of the material, or its immediate use in manufacture, such entry can be authorized without risk of being the means of introducing cotton pests. The provisions for such entry without disinfection are fully indicated in the cotton regulations. (For tables indicating, respectively, the importations of cotton, cotton waste, bagging and cottonseed, seed cotton, and cottonseed products, see pp. 26, 27.)

#### FRUIT AND VEGETABLE QUARANTINE.

As a step toward keeping certain injurious fruit and melon flies out of the United States, a quarantine has been placed on all fruits and vegetables offered for import except from Canada, effective on and after November 1, 1923. This action was taken following a public hearing held December 19, 1922, at the department.

Bananas, pineapples, lemons, sour limes, and grapes of the European or Vinifera type, are permitted unlimited entry from any foreign country under this quarantine, the experts of the department believing that these fruits are reasonably free from risk. No restrictions are placed on the entry of fruits and vegetables from Canada and exceptions are made for the entry of certain fruits and vege-

tables from Mexico, Central America, the West Indies, and certain other countries. It may be noted that the fruits which enter most largely into our imports, such as bananas, lemons, grapes, etc., are open to unlimited entry. Naturally, the quarantine bears most strictly on those tropical and subtropical countries in which fruit flies are known to be most thoroughly established and the fruits and vegetables from which would therefore have a peculiar risk to this country.

That the danger of entry of important fruit fly and other pests in connection with imports of fruits and vegetables is a very real one is clearly indicated by the many interceptions of infested fruits and vegetables which have been made at various ports of entry, both by Federal and State inspectors. Many of these interceptions have been in connection with fruits brought in by passengers or by ships' crews or as a part of ships' stores, but others have been in connection with commercial shipments. Except as to the ports of California and Florida, and in very recent years New Orleans, no thoroughgoing inspection has been maintained of fruit and vegetable entries. That this country has not become invaded by fruit flies is therefore more a matter of good fortune than otherwise.

The danger is, furthermore, a rapidly growing one with the increase of world commerce and especially with the shortening of time between countries by the building of speedier ships. As an example, it is now possible to send fairly perishable fruit, such as peaches, apricots, melons, etc., from South Africa to New York and to have such fruit cross the continent to San Francisco. A portion of a shipment of nectarines so routed from South Africa was intercepted in California and found infested with fruit-fly larvæ. It is known also that various foreign countries invaded with fruit flies are making preparations to increase their fruit and vegetable exports to the United States, and some of the shipments which have already reached us from such countries, as just noted, have proved to be infested with fruit flies. The risk which will follow the more frequent and larger shipments which are in prospect is evident, and the necessity for taking prompt measures to protect the American fruit cultures from these pests would seem to require no argument.

Perhaps the most destructive of all the pests of fruits and vegetables are the various fruit flies which have gained foothold more or less widely throughout the tropical and subtropical regions of the world other than in the United States. In various countries these pests have caused tremendous losses to nearly all classes of fruits and vegetables, often preventing the further profitable production of such crops. While they are particularly disastrous in subtropical and tropical countries, their range as determined by temperature would include the citrus areas of the United States and probably extend far northward into the peach, prune, apple, and other deciduous fruit-producing areas.

#### EXPLORATION AND RESEARCH WORK.

During the year the board has conducted, in cooperation with the appropriate bureaus of the department, important research work, notably with respect to the pink bollworm of cotton, potato-wart disease, and the date scale.



The life history and general research study of the pink bollworm which has been in progress for several years in the Laguna, Mexico, is reported in connection with the discussion of the pink bollworm on pages 3, 4. The research work on the potato wart is discussed under the heading "The potato wart," on pages 11, 12.

The needs for information as a basis for quarantine regulations have necessitated important surveys or exploration work in Mexico, having relation to the pink bollworm and other enemies of cotton, to fruit-fly enemies of various Mexican fruits, and to stalk borers and other insect enemies of broomcorn. A brief review of this research and exploration work follows:

*Fruit flies in Mexico.*—To determine the present status in Mexico of various fruit flies, Dr. William M. Mann, tropical insect expert of the Bureau of Entomology, made for the board during April and May a thorough field survey of fruit-fly conditions in Mexico, including surveys of the western tier of States—Lower California, Sonora, Sinaloa, Territory of Tepic—following with central and southern Mexico as far south as the Isthmus of Tehuantepec, and returning along the eastern coast, including the districts of Vera Cruz, Tampico, and northward. At the season of the year during which the western tier of States was explored no evidence was found of the presence of the Mediterranean, Mexican, or other fruit flies as far south as Tepic. This may, however, have been due to the fact that this portion of the survey was made in January and February. In the next State to the south, Jalisco, Mexican fruit fly was found in regions favorable to the insect, sparingly during March and April, and again later in May. Throughout central Mexico, south of Mexico City, and in eastern Mexico, fruit-fly infestation seemed to be fairly general and often severe. On the east coast the fruit fly has been reported as far north as Monterey. Doctor Mann was accompanied over much of his trip by officials of the Mexican department of agriculture and occasionally by fruit growers and others in interest. The Mediterranean fruit fly was not determined as occurring in any of the regions visited. No important pests were found attacking tomatoes, which are grown largely for export to the United States, and useful data were obtained with respect to the general fruit and vegetable productions of Mexico.

In general the fruit-fly situation in Mexico does not seem to warrant any reconsideration at this time of the existing quarantine restrictions as to certain Mexican fruits. To more fully determine the fruit-fly status of the west coast of Mexico, Doctor Mann was commissioned to make a second trip in October and November, and this work is now in progress.

*Cotton insects.*—H. C. Millender, of the board's technical staff, accompanied Doctor Mann for a part of the time, covering the west coast district and central Mexico, for the purpose of determining the status of the pink bollworm, cotton boll weevil, and other cotton pests along the west coast and elsewhere in Mexico other than in the known areas of infestation in the Laguna and other points in northern Mexico. The presence of the boll weevil was determined at Hermosillo (Sonora); Los Mochis, Culiacan, and Villa Union (Sinaloa); Tuxpan and Tepic (Nayarit); and Cocula (Jalisco). Study by experts failed to determine any of the material collected as belonging to the related *Thurberia* weevil.



The presence of the pink bollworm was not determined in any of the States listed above. The production of cotton on the west coast has not been important hitherto, but in some of the States visited the production is increasing and there seems to be a likelihood of very considerable future development.

*Mexican broomcorn.*—Requests for the direct entry without disinfection of Mexican broomcorn grown in the vicinity of Xicotencatl, on the east coast of Mexico, made it desirable to get accurate information as to the possible risks from such broomcorn of being the means of carriage of any pests new to the United States. An exploration of this district in May developed the fact that the broomcorn was more or less infested by a stalk borer apparently new to the United States. In view of the experience with the European corn borer and the fact that such borers attack a large variety of plants and, therefore, with bulk movement, would have opportunity to be introduced and established almost anywhere, it was determined that the existing regulations under the corn borer quarantine could not be modified with safety as to Mexico.

Under the European corn borer quarantine, No. 41, the entry of foreign broomcorn is restricted to certain ports of entry, now New York, Boston, and San Francisco, and under the further requirement of steam sterilization. Mexican broomcorn can therefore be entered through the ports indicated, but must reach these ports by water route.

It may be noted that there are at least three corn borers which are known to occur abundantly in Mexico, and at least one of these, *Diatraea lineolata* Walk., is apparently quite possible of becoming a serious corn pest, perhaps widely in the United States. The larvæ collected in the broomcorn at Xicotencatl seem to come closest to this species.

#### QUARANTINE INSPECTION SERVICE.

This service includes (1) inspection and, if necessary, the disinfection as a condition of entry of restricted plants and plant products arriving at various ports, and examination, in cooperation with customs officials, of passengers' baggage, crews' quarters, ships' stores and cargoes, to determine their freedom from contraband material; (2) inspection, in cooperation with the customs and postal officials, of foreign parcel-post packages for contraband material; (3) inspection in the District of Columbia; (4) inspection of plant introduction gardens; and (5) Mexican border inspection (see discussion of this last under pink bollworm, pp. 4, 5).

*Port inspection.*—Owing to the large number of foreign vessels arriving at Galveston and the possibility of contraband material on these vessels, an inspector of the board was stationed at that port in February to assist and collaborate with the customs service in the enforcement of plant quarantines. Inspectors of the board are now stationed at nine of the principal ports of entry, namely, Boston, New York, Philadelphia, Baltimore, San Francisco, New Orleans, Portland, (Oreg.) Seattle, and Galveston. This service is further supplemented by collaborators, either State or Federal, stationed at 16 ports of entry in Virginia, Florida, Mississippi, and California.

In addition to the inspection of restricted plants and plant products, the inspectors of the board have supervised the fumigation of

all cotton and the sterilization of all broomcorn which has arrived at the various ports of entry.

The examination of ships in cooperation with customs officials for contraband material which may be brought either as cargo, ships' stores, crews' effects, or passengers' baggage, constitutes an important part of the work of this service. The results of the past two years' work have forcibly demonstrated the need and importance of this work. During the year, 8,282 foreign vessels were boarded and examined as follows: Baltimore, 988; Boston, 993; New Orleans, 2,211; New York, 1,600; Philadelphia, 1,551; Portland, 273; Seattle, 389; Galveston, 277 (4 months). Contraband material was found on 3,577 of the vessels boarded.

*Parcel-post inspection.*—As a result of the examination of foreign parcel post packages in cooperation with the customs and postal officials, a number of interceptions of living insects and contraband plant material were made. Many of the insects intercepted are not known to be established in the United States. In view of the large number of parcel-post packages constantly arriving, the possibilities of introducing injurious pests are ever present; and to prevent such an occurrence, the inspectors of the board are making every effort to cooperate with the officials previously referred to.

*District of Columbia inspection.*—The inspection work in the District of Columbia includes (1) the inspection of all plants and plant products introduced or distributed by the Department of Agriculture, the Botanical Garden, and the propagating garden of the War Department; (2) the inspection of commercial plant shipments entering and leaving the District of Columbia; (3) the inspection of all plants introduced under special permit in accordance with regulation 14, Quarantine 37; mail shipments in accordance with the order of March 14, 1922, relative to regulation 3, and plants introduced under contiguous permit, regulation 15, of Quarantine 37; (4) the fumigation and disinfection of all material requiring such treatment, including cotton samples. (See also p. 15.)

During the year 15,079 lots of plant material were carefully inspected for insects and plant diseases at the inspection house. Of this number, 5,398 were fumigated. In addition, 6,064 mail shipments of cotton samples were fumigated in accordance with the procedure outlined in H. B. 159, issued November 24, 1922. Many shipments of domestic grown nursery stock arrived in the District of Columbia by freight, express, and truck, and 2,660 mail shipments of plants were inspected at the post office before delivery.

*Inspection of plant introduction gardens.*—Continuing the practice which has been in vogue for a number of years, inspectors of the board have conducted the inspection of the various plant introduction gardens maintained by the Department of Agriculture at Bell, Md., Miami and Brooksville, Fla., Savannah, Ga., Chico, Calif., and the field station of the office of dry land agriculture at Mandan, N. Dak.

*Pest interceptions.*—As a result of the examinations made by the inspectors and collaborators of this service, 482 recognized species and 204 insects, which could be placed generically only, were collected on imported plants and plant products. In many instances a given



species was collected on a wide range of hosts arriving from a number of countries. Numerous insects injurious to plants and plant products were taken, many of which are not known to occur in the United States. Recognized fruit pests, such as the Mexican fruit fly in oranges and mangoes from Mexico, and sapodillas from Nicaragua; the Mediterranean fruit fly in peppers, guavas, coffee berries, avocados, rose apples, etc., from Hawaii, in loquats from Bermuda, and in apples from Algeria; and the West Indian fruit fly in Cuban plums and mangoes from Cuba and in guavas from Jamaica, were taken in ships' stores, crews' quarters, and passengers' baggage. Avocados from the interior of Mexico were found on six occasions to be infested with the avocado weevil. An unrecognized weevil (*Conotrachelus* sp.) was taken in avocados intercepted at the foot-bridge at Eagle Pass.

Larvæ of the pink bollworm were intercepted in cottonseed arriving from Brazil, Egypt, Dominican Republic, England, Mexico, and Porto Rico. Inspectors of the board located at Philadelphia discovered that commercial shipments of cork arriving from France occasionally bore egg masses of the gipsy moth. Brown-tail nests were on three occasions intercepted on plants from the same country. The lesser bulb fly, which has been reported on several occasions to be a serious onion pest in Europe, was collected in 27 shipments of narcissi from Holland and one from France. In one instance a single bulb was found to contain 77 living larvæ. The narcissus fly was also taken in bulbs arriving from England, France, and Holland. The snag boring emphytus, which has been reported to attack raspberries in Europe, was collected on rose stocks as follows: England, 35; France, 8; Holland, 7; Ireland, 7. The European earwig, which has been introduced into this country within recent years and is now causing considerable alarm in the Pacific Northwest, accompanied iris rhizomes from France and bulbs and delphiniums from Holland. The West Indian sweet potato weevil was intercepted on a number of occasions in yams and sweet potatoes in the possession of passengers arriving from Jamaica, Barbados, Brazil, and Porto Rico.

Many other interceptions of importance could be named. A full list of the insects intercepted on foreign plants and plant products is published annually in the Letters of Information of this board, which are available for distribution.

*Better inspection facilities needed in Washington.*—Quarantine 37, as now administered, involves the handling and inspection in Washington of a vast quantity of plant material imported for introduction and propagation purposes by commercial growers and propagators throughout the United States. It also involves the inspection of all foreign and domestic seeds and plants which are distributed by the Department of Agriculture, as well as all commercial shipments of plants that come into the District of Columbia for local purposes or which are exported from the District in interstate traffic. Much of this material must be fumigated or disinfected. It involves, further, the receipt and examination of all foreign cotton samples.



Much of this plant and other material which is thus received by this office must be disinfected as well as inspected, and must be again sent out to the ultimate consignees. Some of the material is also grown under quarantine either for the purpose of determining freedom from pests or for experimental purposes in relation to disinfection or pest control. This work has involved during the fiscal year the handling, inspection, disinfection, and reshipment of upward of 20,000 different parcels and shipments, varying in quantity from small packages to carload lots. The protective value of this work in the exclusion of plant pests has been indicated elsewhere in this report (p. 20).

The inadequacy of the inspection and holding quarters on the grounds of the department available for this important work very greatly handicaps the men engaged in it and makes it very difficult to properly handle and examine the imported and other material. The available greenhouse facilities are also entirely inadequate to care for such of this material as it is necessary to hold in quarantine or for any experimental work.

#### **RECORD OF IMPORTS OF RESTRICTED PLANTS AND PLANT PRODUCTS.**

Under various foreign quarantines, the entry of certain plants and plant products is restricted and made subject to inspection, and, if necessary, disinfection as a condition of entry for the purpose of excluding various plant diseases and insect pests. These restricted plants and plant products include nursery stock, plants, and seeds for propagation, potatoes from various countries, various fruits, vegetables, and grains, broomcorn, and cotton, cotton waste, cotton wrappings, and cottonseed products. The records of the importations of the more important of these articles are indicated in the following discussion and tables.

#### **IMPORTATIONS OF NURSERY STOCK, PLANTS, AND SEEDS.**

It should be noted that under regulation 2 of Quarantine 37, field, vegetable, and flower seeds, as well as all fruits, vegetables, cereals, and other plant products imported for medicinal, food, or manufacturing purposes, are free from all restrictions, even the taking out of a permit, and hence no record of the importations of these classes of seeds and plant products has hitherto been collected by the board. Hereafter, however, under the fruit and vegetable quarantine (No. 56), permits will be required for the importation of all fruits and vegetables, and an exact record of their importation will be kept.

Under regulation 3 of Quarantine 37, certain bulbs, fruit and rose stocks, and seeds are open to unlimited importation under continuing permits, over 5,700 of which have already been issued. The three tables following give a record of the importations under this regulation during the fiscal year 1923, of (1) fruit, rose, and nut stocks, (2) bulbs, and (3) seeds of woody plants.

TABLE 1.—*Importation of fruit, rose, and nut stocks.*

[Figures indicate number of plants.]

Kind of stocks.	Country of origin.										Total.
	Chile.	Costa Rica.	Eng-land.	France.	Ger-many.	Holland.	Ire-land.	Italy.	Scot-land.	Spain.	
Fruit:											
Apple.....			180	3,357,030		383,200		175,500			3,920,910
Cherry.....				7,953,710	150,100	2,078,715					10,182,525
Grape.....	2,000			6,000				200		2,640	10,840
Pear.....				2,519,660		366,134		151,500			3,037,294
Pineapple.....		100									100
Plum.....				2,755,465		57,200		136,000			2,948,665
Quince.....				946,250		23,500		5,500			975,250
Rose.....			2,035,800	2,451,700		2,886,909	161,000		40,000		7,575,409
Nut:											
Chestnut.....				3,000							3,000
Filbert.....				9,300							9,300
Walnut.....				23,500							23,500
Total number of stocks....	2,000	100	2,035,950	20,025,615	150,100	5,800,658	161,000	468,700	40,000	2,640	28,686,793

TABLE 2.—*Importation of bulbs.*

[Figures indicate number of bulbs.]

Country of origin.	Crocus.	Hyacinth.	Lily.	Lily of the valley	Narcissus.	Tulip.	Un-classified.	Total.
Azores.....			27,950					27,950
Bermuda.....			308,145		3,850			311,995
China.....			300		1,278,924			1,279,224
England.....	230		7,055	12	438,003	4,164		449,464
France.....		853,395	296,801		39,376,310	98,405		40,624,911
Germany.....				18,139,025				18,139,025
Holland.....	8,286,070	28,282,827	300,272	1,464,055	34,248,250	76,610,547	183,900	149,475,921
Italy.....		6,200	12,639		1,734,550			1,753,389
Japan.....			8,192,468		10,694			8,203,162
Sweden.....	200	375			2,700	6,000		9,275
<b>Total.....</b>	<b>8,286,500</b>	<b>29,142,797</b>	<b>9,145,630</b>	<b>19,603,092</b>	<b>77,193,281</b>	<b>76,719,116</b>	<b>183,900</b>	<b>220,274,316</b>

TABLE 3.—*Importation of tree seeds.*

[Figures indicate number of pounds.]

Country of origin.	Apple.	Cherry.	Nuts and palm.	Orna-mental and tree.	Pear.	Per-sim-mon.	Plum.	Quince.	Rose.	Total.
Argentina.....				220						220
Australia.....			29,025	92						29,117
Austria.....	38	38		3,509			896			4,481
Bermuda.....			460							460
Brazil.....			1,477							1,477
Canada.....				928						928
Chile.....		85								85
China.....	10		5	1,853	120	605	757			3,350
Cuba.....			984							984
Denmark.....				78					2	80
England.....				25						25
France.....	21,177	1,206	736	3,711	1,926	50	1,768	53		30,627
Germany.....		1,332		650					10	1,992
Holland.....									2	2
Italy.....			875	461			540			1,876
Japan.....			1,693	3,435	5,773	946	4,302	191	802	17,142
Poland.....				693						693
Sweden.....				69						69
West Indies.....			260							260
<b>Total.....</b>	<b>21,225</b>	<b>2,661</b>	<b>35,515</b>	<b>15,724</b>	<b>7,819</b>	<b>1,601</b>	<b>8,263</b>	<b>246</b>	<b>814</b>	<b>93,868</b>

The distribution within the United States of the classes of nursery stock recorded in the above Tables 1, 2, and 3 is indicated in Table 4. As in previous years, imported nursery stock has been widely distributed throughout the country. The bulk of this material, with the exception of bulbs, is inspected by the various State authorities concerned.

TABLE 4.—*Distribution, by States, of nursery stock and seeds imported under regular permit.*

[Figures indicate number of cases unless otherwise designated.]

State.	Bulbs.	Fruit stocks.	Rose stocks.	Nut stocks.	Seeds (by pounds.)				
					Fruit.	Nut and palm.	Orna- mental and tree.	Rose.	Total.
Alabama.....	365	2	2			93	245		338
Alaska.....	2								
Arizona.....	70								
Arkansas.....	257	13							
California.....	4,924	45			7,246	9,783	1,139		18,168
Colorado.....	887		3			4	7	2	13
Connecticut.....	2,323	70	111		100	545	32	50	727
Delaware.....	340								
District of Columbia.....	601				15	7			22
Florida.....	108	4	1			6,901	262		7,163
Georgia.....	912	8	1		220		358	10	588
Idaho.....	93								
Illinois.....	27,981	5	74		427	1,706	6,161	110	8,404
Indiana.....	1,564	68	96						
Iowa.....	1,602	255	16		3,748		306		4,054
Kansas.....	731	35			12,607		403		13,010
Kentucky.....	821	1				30			30
Louisiana.....	202					390	21		411
Maine.....	469								
Maryland.....	1,257	13	5			9		10	19
Massachusetts.....	7,428	3	10			110	650		760
Michigan.....	4,425	88	13					8	8
Minnesota.....	2,096		3			61			61
Mississippi.....	217						3		3
Missouri.....	1,761	38	7		3,687	75			3,762
Montana.....	232					86			86
Nebraska.....	593	4							
Nevada.....	16								
New Hampshire.....	245						319		319
New Jersey.....	6,970	26	119		23	6,447	280	475	7,225
New Mexico.....	55								
New York.....	51,361	700	266	5	7	2,517	372	50	2,946
North Carolina.....	595	7				35	38		73
North Dakota.....	133				42				42
Ohio.....	8,320	109	106	4	4	1,116	25		1,145
Oklahoma.....	440	2							
Oregon.....	1,157	5			2,449	389	144	3	2,985
Pennsylvania.....	19,040	38	33	1	7,679	4,812	4,379	102	16,972
Rhode Island.....	1,495		1						
South Carolina.....	325								
South Dakota.....	116								
Tennessee.....	1,046	12	3				1		1
Texas.....	1,232	6			1	259	105		365
Utah.....	262	2							
Vermont.....	294								
Virginia.....	1,489	3	3		50	7			57
Washington.....	1,864	17			3,432	7	219	2	3,660
West Virginia.....	556				2				2
Wisconsin.....	2,693		6		76	31	247		354
Wyoming.....	46								
Exported by permittees.....	302	3				95			95
Total.....	162,313	1,582	879	10	41,815	35,515	15,724	814	93,868

The record of entry under special permits issued under regulation 14 of Quarantine 37 for the purpose of keeping the country supplied with new varieties and necessary propagating stock and to meet any other technical or educational need is given in the following table.



During the fiscal year 1923, 897 such permits were issued covering the entry of 15,175,003 plants and bulbs. Importations during the year were made under 719 of these special permits, involving 10,357,406 plants and bulbs. In addition to the record for 1923, a summary for previous years is included. It will be noted that since the promulgation of the quarantine in 1919, 16,113 varieties of plants have been under consideration for entry under this regulation. Of these 14,902 have been approved for entry.

TABLE 5.—*Special permit importations, fiscal year 1923, with combined totals for 1920, 1921, 1922, and 1923.*

Class of plants.	Fiscal year 1923.				Grand totals, 1920-1923.			
	Permits issued.		Permits imported.		Permits issued.		Permits imported.	
	Number.	Quantity.	Number.	Quantity.	Number.	Quantity.	Number.	Quantity.
Gladioli .....	154	8,150,936	111	6,417,430	506	26,329,183	354	14,075,035
Dahlias .....	56	4,542	44	3,804	199	15,751	148	10,320
Iris (rhizomatous) .....	149	66,535	131	15,725	359	98,270	272	32,495
Iris (bulbous) .....	137	3,853,552	81	2,155,349	253	13,053,932	135	6,926,221
Peonies .....	117	191,719	95	92,064	319	732,259	223	188,634
Other bulbs, rhizomes, and roots .....	107	1,592,300	71	697,796	292	5,345,791	173	1,997,437
Ornamentals .....	126	424,918	100	342,991	341	1,586,184	223	1,022,466
Roses .....	65	13,366	64	6,752	230	71,040	173	51,646
Orchids .....	83	14,823	81	14,227	225	54,995	190	32,335
Herbaceous plants .....	106	800,892	88	611,231	291	2,173,760	180	981,353
Fruits (small) .....	7	1,420	2	37	28	4,894	9	319
Total .....		15,175,003		10,357,406		49,466,059		25,318,261

*Summary for the years 1920-1923.*

Fiscal year.	Permits issued.		Permits imported.	
	Number.	Quantity.	Number.	Quantity.
1920 .....	311	10,752,844	171	3,484,195
1921 .....	622	13,965,013	411	8,132,634
1922 .....	750	9,573,199	518	3,344,026
1923 .....	897	15,175,003	719	10,357,406
Grand total .....	2,580	49,466,059	1,819	25,318,261

TABLE 6.—*Number of different varieties of plants requested and approved for the fiscal years 1920-1923.*

Class of plants.	Requested.	Approved.	Per cent approved.
Gladioli .....	823	722	87.7
Dahlias .....	1,723	1,646	95.5
Iris (rhizomatous) .....	1,690	1,644	97.2
Iris (bulbous) .....	273	273	100.0
Peonies .....	1,366	1,223	89.5
Other bulbs, rhizomes, and roots .....	1,190	1,155	97.1
Ornamentals .....	3,280	2,878	87.7
Roses .....	1,703	1,452	85.3
Orchids .....	2,096	2,038	97.2
Herbaceous plants .....	1,850	1,755	94.9
Fruits (small) .....	119	116	97.0
Grand totals .....	16,113	14,902	92.5

## IMPORTATIONS OF COTTON AND COTTON PRODUCTS.

For a general discussion of cotton and cotton-products imports, and revision of the cotton regulations, see pages 15, 16.

The following tables indicate, respectively, the importations of cotton, cotton waste, bagging, cotton seed, seed cotton, and cottonseed products during the fiscal year.

The actual number of bales of cotton, cotton waste, and bagging is indicated, but, inasmuch as the bales vary in size, they are referred to as "running bales."

TABLE 7.—Imports of ginned cotton, by port of entry and country of growth, 1922-23.

[Running bales.]

Ports.	Brazil.	British West Indies.	China.	Colombia.	Dominican Republic.	Dutch East Indies.	Dutch Guiana.	Ecuador.	Egypt.	Haiti.	India.	Mexico.	Peru.	Porto Rico.	Syria.	United States.	Unknown.	Total.
Boston.....	5		6,868			194			197,284	32	11,632		978			15,848		232,841
Buffalo.....																142		142
Calcutta.....												48,342						148,342
Charleston.....																50		50
Detroit.....																23		23
Fall River.....																142		142
New Orleans.....																160		160
New York.....	419	59	16,656	10	218	5	19	201	40,104	9,246	15,131	4,951	72,920	1,850	325	6,451	460	169,025
Niagara Falls.....																1,012		1,012
Philadelphia.....																42		42
Port Huron.....																1		1
Portland, Oreg.....			75															75
Richford.....																13		13
St. Albans.....																341		341
San Francisco.....			14,383								200							14,583
Seattle.....			14,410															14,410
Utica.....																14		14
Vanceboro.....																79		79
Wilmington, Calif.....																101		101
Total.....	424	59	52,392	10	218	199	19	201	237,388	9,278	26,963	53,293	73,898	1,850	325	24,419	460	481,396

<sup>1</sup> Includes 7,964 bales unginned cotton from Imperial Valley, Lower California, Mexico.

TABLE 8.—Imports of cotton waste, by country of origin and port of entry, 1922-23.

[Running bales.]

Country.	Baltimore.	Boston.	Charleston.	New Orleans.	New York.	Norfolk.	Philadelphia.	Portland, Oreg.	San Francisco.	Savannah.	Seattle.	Total.
Belgium.....		281		117	959		191			43		1,591
British West Indies.....					1							1
Canada.....		2,197			156							2,353
China.....		2,132			5,801		75	486	420		2,124	11,038
Colombia.....					34							34
Denmark.....					115							115
Egypt.....		300										300
England.....	417	46,434	4,364	9,807	7,704	191	4,416		50	116		73,499
France.....		2,933	66		1,650							4,669
Germany.....		2,159			2,201		539		401			5,300
Holland.....	318	29,394		260	4,400				32	147		35,331
India.....		430			8,361		600					9,391
Italy.....	151	2,196			3,819		604					6,770
Japan.....		1,121			7,219		1,406	651	1,301		6,304	18,002
Mexico.....					4,062							4,062
Scotland.....					272		10					282
Spain.....					1,554							1,554
Switzerland.....	484	11,449	269		1,127	46	463		490			14,328
United States.....	50	1,030	33		538	245	31	418				2,345
Total.....	1,420	102,076	4,732	10,184	49,973	482,9,115	1,555	2,694	306	8,428		190,965

TABLE 9.—Imports of bagging, by country of origin and port of entry, 1922-23.

[Running bales.]

Country.	Baltimore.	Boston.	Charleston.	Detroit.	Galveston.	New Orleans.	New York.	Norfolk.	Philadelphia.	Port Huron.	Portland.	Richford.	St. Albans.	Savannah.	Total.
Austria.....			633												633
Belgium.....	2,228	292	4,476		157	3,547	10,755	136	4,884					689	27,164
Canada.....				1,197	654		2,318		160	760			33	158	5,280
Denmark.....	453						466								919
England.....	2,952	7,301	4,852		251	11,727	11,828	14,622	7,889					129	61,551
France.....	1,409	71	380			4,683	12,353	617	2,484						21,997
Germany.....		535	3,081			552	2,995		127						7,290
Holland.....	271		1,196				11,656	975	1,705						15,803
India.....							9								9
Ireland.....							231								231
Italy.....						189	145								334
Japan.....										791					791
Scotland.....	182		50				2,707		474						3,413
Spain.....			4,895			775	1,712		51						7,433
Switzerland.....			165				20								185
Wales.....							44								44
Total.....	8,030	7,664	19,728	1,197	1,062	21,473	57,239	16,350	17,774	760	791	33	158	818	153,077

TABLE 10.—Imports of cottonseed, seed cotton, and cottonseed products, 1922-23.

Port of entry.	Cotton-seed.	Seed cotton.	Cotton-seed cake.	Cotton-seed meal.
	Tons.	Tons.	Tons.	Tons.
Boston.....			769	10
Calexico.....	24,731	5,973		
Eagle Pass.....			402	
Total.....	24,731	15,973	1,171	10

1 Shown in cotton tables as 7,964 bales of unginned cotton.



## IMPORTATIONS OF FRUITS AND VEGETABLES UNDER QUARANTINE 49.

The entry of fruits and vegetables from Cuba, the Bahamas, Jamaica, Canal Zone, Costa Rica, India, Philippine Islands, Ceylon, and Java is restricted under Quarantine 49, on account of the black fly. The records of importations under this quarantine for the year are given in the following tables:

TABLE 11.—*Fruit and vegetables imported under Quarantine No. 49 during fiscal year ended June 30, 1923, by countries of origin.*

Kind.	Bahamas.	Canal Zone.	Costa Rica.	Cuba.	Jamaica.	Philippine Islands.	Total.
Avocados.....crates	8			57,092	9		57,109
Bananas.....bunches	52	563,300	3,485,756	1,742,519	10,033,261	10	15,824,898
Beans.....crates				316			316
Beets.....do	38			292			330
Carrots.....do	147			349			496
Cassava.....do				1,488			1,488
Coconuts.....number	15,150	14,869,444	138,360	1,206,200	21,211,577		37,440,731
Copra.....bags		18		100	6,933		7,051
Cucumbers.....crates				374			374
Eggplants.....do				64,218			64,218
Grapefruit.....do	350		567	261,653	593		263,163
Lima beans.....do				20,361			20,361
Limes.....do			388	181	82		651
Malangas.....do				786			786
Mammeas.....do	2			1,540			1,542
Mangoes.....do				8,638	207	1	8,846
Okra.....do				7,197			7,197
Onions.....do				14,108			14,108
Oranges.....do			2,702	5,122	1,796		9,620
Parsley.....do	64			182			246
Peas.....do	31			107	35		142
Peppers.....do				161,564	447		162,042
Pineapples.....do	782	1,344	23,744	1,377,395	985		1,404,250
Plantains.....bunches	6	1,378	71	80,107	147		81,709
Pumpkins.....crates		74		215	37		326
Sapodillas.....do	452			3			455
Sour sops.....do	6			271			277
Squash.....do				2,040			2,040
Tangerines.....do			6	246			252
Tomatoes.....do	150,277			169,653			319,930
Not specified.....do	6			657	8		671
Miscellaneous:							
Fruit.....do				143	3		146
Vegetables.....do				184	72		256

TABLE 12.—*Fruits and vegetables imported under Quarantine No. 49 during fiscal year ended June 30, 1923, by ports of entry.*

Kind.	Baltimore, Md.	Boston, Mass.	Key West, Fla.	Los Ange- les, Calif.	Miami, Fla.	New Orleans, La.
Avocados.....crates.....		2	13,165		8	22,017
Bananas.....bunches.....	2,437,200	1,668,736	6,262	11,795	41,404	533,285
Beans.....crates.....			87			89
Beets.....do.....						
Carrots.....do.....						
Cassava.....do.....			373			
Coconuts.....number.....	1,493,800	75,000	2,000		14,650	1,322,900
Copra.....bags.....						
Cucumbers.....crates.....			9			2
Eggplants.....do.....			4,300			3,532
Grapefruit.....do.....	2	259	121,847			5,595
Lima beans.....do.....			185			221
Limes.....do.....						127
Malangas.....do.....			253			
Mammeas.....do.....			327		2	170
Mangoes.....do.....		2				6,545
Okra.....do.....			254			3,071
Onions.....do.....			100			
Oranges.....do.....		412	4,195			768
Parsley.....do.....						
Peas.....do.....						5
Peppers.....do.....	447		2,588		29	1,241
Pineapples.....do.....	482	6,887	1,045,158		454	34,130
Plantains.....bunches.....		38	28,227		36	
Pumpkins.....crates.....			23			74
Sapodillas.....do.....					452	
Sour sops.....do.....			140		6	1
Squash.....do.....			35			2
Tangerines.....do.....		3	242			
Tomatoes.....do.....			50,386		80,317	48,847
Not specified.....do.....			1		6	
Miscellaneous:						
Fruits.....do.....			28			7
Vegetables.....do.....			6			73

Kind.	New York, N. Y.	Nor- folk, Va.	Phila- delphia, Pa.	Savan- nah, Ga.	Tampa, Fla.	Seattle, Wash.	Total.
Avocados.....crates.....	8,727				13,190		57,109
Bananas.....bunches.....	8,171,718	8,345	2,944,728	1,400	12	10	15,824,898
Beans.....crates.....	21				119		316
Beets.....do.....	330						330
Carrots.....do.....	496						496
Cassava.....do.....	989				126		1,488
Coconuts.....number.....	31,522,656		2,981,725	28,000			37,440,731
Copra.....bags.....	7,011		40				7,051
Cucumbers.....crates.....	363						374
Eggplants.....do.....	56,386						64,218
Grapefruit.....do.....	135,422				38		263,163
Lima beans.....do.....	19,955						20,261
Limes.....do.....	524						651
Malangas.....do.....	118				415		786
Mammeas.....do.....					1,043		1,542
Mangoes.....do.....	2,298					1	8,846
Okra.....do.....	3,778				94		7,197
Onions.....do.....	14,007				1		14,108
Oranges.....do.....	4,049		112	75	9		9,620
Parsley.....do.....	246						246
Peas.....do.....	137						142
Peppers.....do.....	157,692				45		162,042
Pineapples.....do.....	313,358				3,781		1,404,250
Plantains.....bunches.....	2,917				50,491		81,709
Pumpkins.....crates.....	179				50		326
Sapodillas.....do.....					3		455
Sour Sops.....do.....					130		277
Squash.....do.....	2,003						2,040
Tangerines.....do.....	7						252
Tomatoes.....do.....	140,336				44		319,930
Not specified.....do.....	664						671
Miscellaneous:							
Fruits.....do.....	25				86		146
Vegetables.....do.....	169				8		256

## IMPORTATIONS OF BROOMS AND BROOMCORN.

The record kept by the board of the importation of broomcorn, including manufactured brooms, is a matter of special interest on account of its relation to the important corn borer subject. (See discussion under "European corn borer," p. 6.) A statement is given in Table 13 indicating the quantities imported and the countries of origin of such broomcorn. As elsewhere indicated the importations this year were unusually heavy, totaling 42,000 bales of broomcorn and 13,108 bundles of brooms—all entered and sterilized through the ports of New York and Boston, with the exception of 254 bales of broomcorn from Argentina and one bale from Australia, which were entered and sterilized at the port of San Francisco. The sterilization of manufactured brooms was limited to those, usually of large size, which, from the nature of their manufacture, contained large elements of the stalk in such condition as to be a means of carrying the larvæ of the corn borer.

TABLE 13.—*Importations of brooms and broomcorn during fiscal year ended June 30, 1923.*

Country of origin.	Brooms.	Broomcorn.	Country of origin.	Brooms.	Broomcorn.
Argentina.....		1,935 bales.	Italy.....	277 bales, 126 bundles, 24 packages.	10,813 bales, 1 package.
Australia.....		1 bale.			
Austria.....	493 bundles.		Yugo Slavia....	12,000 brooms...	
Belgium.....	1 bundle.		Rumania.....	2 bales, 1,899 bundles, 2 cases.	8 cases, 3 bags.
Germany.....	2,153 bundles.	743 bales.	Spain.....	31 bales.	
Hungary.....	480 bundles, 7,500 brooms.	28,416 bales, 2,447 bundles, 51 bags, 1 package.			

## IMPORTATIONS OF OTHER RESTRICTED PLANT PRODUCTS.

In addition to the foregoing record of plants and plant products, the board has supervised the importation under quarantine of 16,391 bushels of potatoes from Mexico, 45,121 cases of Satsuma oranges from Japan, and to insure freedom from earth 30,549 packages of horseradish.

The board has also supervised and safeguarded importation for immediate exportation in bond to other countries of considerable quantities of prohibited or restricted plants and plant products.

## TERMINAL INSPECTION OF MAIL SHIPMENTS OF PLANTS AND PLANT PRODUCTS.

Arrangements were made during the fiscal year 1923 by Oregon for terminal inspection of mail shipments of plants and plant products under the authority of the act of March 4, 1915, and the terminal inspection points in Hawaii, Utah, California, and Washington were revised. California, Arizona, Montana, Florida, Washington, Arkansas, the District of Columbia, Mississippi, the Territory of Hawaii, and Utah had previously, in the order named, availed themselves of the provisions of the act referred to. Such terminal inspection is conducted entirely at the expense of the States concerned and has proved to be of great value to the board in



the enforcement of its domestic quarantines. This is particularly true of our white pine blister rust quarantines.

#### CONVICTIONS FOR VIOLATIONS OF THE PLANT QUARANTINE ACT.

During the year the solicitor of the department reported 49 convictions for violations of the plant quarantine act, 11 in regard to the gipsy moth and brown-tail moth quarantine, 34 in regard to the white pine blister rust quarantine, 2 in regard to the Mediterranean fruit fly and melon fly quarantine, and 1 each in regard to the European corn borer quarantine and the avocado or alligator pear quarantine. Fines aggregating \$1,920 and costs were imposed.

#### NEW AND REVISED PLANT QUARANTINES.

The following quarantines and other restrictive orders have been either promulgated or revised during the period, July 1, 1922, to the date of the preparation of this report, October 1, 1923:

*Domestic quarantines.*—The European corn borer quarantine, amended July 28, 1922, September 2, 1922, November 16, 1922, and March 26, 1923; the Mediterranean fruit fly and melon fly quarantine, revised October 9, 1922; the black stem rust quarantine, amended December 26, 1922; the white pine blister rust quarantine (No. 54), amended March 2, 1923; the pink bollworm quarantine, revised May 19, 1923, and amended October 8, 1923; the Japanese beetle quarantine, revised April 9, 1923; and the gipsy moth and browntail moth quarantine, amended June 6, 1923, and August 21, 1923.

*Foreign quarantines.*—The nursery stock, plant, and seed quarantine, amended October 13, 1922, and December 18, 1922, and revised April 5, 1923; the European corn borer quarantine, revised August 4, 1923; the seed or paddy rice quarantine, promulgated July 17, 1923; and the fruit and vegetable quarantine, promulgated August 1, 1923.

*Other restrictive orders.*—Regulations governing the importation of cotton and cotton wrappings into the United States, revised February 24, 1923; and regulations governing the importation of potatoes into the United States, amended January 17, 1923 (withdrawn February 13, 1923).

The Federal Horticultural Board is now enforcing 22 foreign and 15 domestic quarantines.

A list of the domestic and foreign quarantines and other restrictive orders as now in force follows.

## LIST OF CURRENT QUARANTINE AND OTHER RESTRICTIVE ORDERS.

### QUARANTINE ORDERS.

The numbers assigned to these quarantines indicate merely the chronological order of issuance of both domestic and foreign quarantines in one numerical series. The quarantine numbers missing in this list are quarantines which have either been superseded or revoked. For convenience of reference these quarantines are here classified as domestic and foreign.

#### DOMESTIC QUARANTINES.

*Date palms.*—Quarantine No. 6: Regulates the interstate movement of date palms and date-palm offshoots from Riverside County, Calif., east of the San Bernardino meridian; Imperial County, Calif.; Yuma, Maricopa, and Pinal Counties, Ariz.; and Webb County, Tex.; on account of the Parlatoria scale (*Parlatoria blanchardi*) and the Phoenicococcus scale (*Phoenicococcus marlatti*).

*Hawaiian fruits.*—Quarantine No. 13, revised: Prohibits or regulates the importation from Hawaii of all fruits and vegetables, in the natural or raw state, on account of the Mediterranean fruit fly and the melon fly.

*Sugar cane.*—Quarantine No. 16: Prohibits the importation from Hawaii and Porto Rico of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungous diseases.

*Five-leaved pines, Ribes and Grossularia.*—Quarantine No. 26, as amended: Prohibits the interstate movement of five-leaved pines, currant, and gooseberry plants from all States east of and including the States of Minnesota, Iowa, Missouri, Arkansas, and Louisiana to points outside of this area; prohibits further (1) the interstate movement of five-leaved pines and black-currant plants to points outside the area comprising the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York, and, (2) to protect the State of New York, the movement from the New England States, on account of the white pine blister rust.

*Sweet potato and yam.*—Quarantine No. 30: Prohibits the movement from the Territories of Hawaii and Porto Rico into or through any other Territory, State, or District of the United States of all varieties of sweet potatoes and yams (*Ipomoea batatas* and *Dioscorea* spp.), regardless of the use for which the same are intended, on account of the sweet-potato weevil (*Cylas formicarius*) and the sweet-potato scarabee (*Euscepes batatas*).

*Banana plants.*—Quarantine No. 32: Prohibits the movement from the Territories of Hawaii and Porto Rico into or through any other Territory, State, or District of the United States of any species or variety of banana plants (*Musa* spp.), regardless of the use for which the same are intended, on account of two injurious weevils, *Rhabdocnemis obscurus* and *Metamasius hemipterus*.

*Black stem rust.*—Quarantine No. 38 as amended: Prohibits the movement interstate to any point outside of the quarantined area of the common barberry and its horticultural varieties as well as certain other species of Berberis and Mahonia, on account of the black stem rust of wheat, oats, barley, rye, and many wild and cultivated grasses.

*European corn borer.*—Quarantine No. 43 (second revision) as amended: Regulates the movement interstate to any point outside of the quarantined area of (1) corn and broomcorn (including all parts of the stalk), all sorghums, sudan grass, celery, green beans in the pod, beets with tops, spinach, rhubarb, oat and rye straw as such or when used as packing, cut flowers or entire plants of chrysanthemum, aster, cosmos, zinnia, hollyhock, and cut flowers or entire plants of gladiolus and dahlia, except the bulbs thereof, without stems, from infested areas in Maine, New Hampshire, Massachusetts, and Rhode Island, and (2) corn and broomcorn (including all parts of the stalk), all sorghums, and sudan grass from infested areas in New York, Pennsylvania, Ohio, and Michigan on account of the European corn borer (*Pyrausta nubilalis*).

*Gipsy moth and brown-tail moth.*—Quarantine No. 45, as amended: Regulates the movement interstate to any point outside of the quarantined towns and territory, or from points in the generally infested area to points in the lightly infested area, of stone or quarry products, and of the plants and the plant products listed therein. The quarantine covers all the New England States.



*Hawaiian and Porto Rican cotton, cottonseed, and cottonseed products.*—Quarantine No. 47: Regulates the movement of cotton, cottonseed, and cottonseed products from Hawaii and Porto Rico on account of the pink bollworm and the cotton blister mite, respectively.

*Japanese beetle.*—Quarantine No. 48, revised: Regulates the movement interstate to any point outside of certain portions of the counties of Mercer, Burlington, Gloucester, and Camden, N. J., and certain portions of the counties of Delaware, Chester, Philadelphia, Montgomery, and Bucks, Pa., of the following articles: (1) The interstate movement of green, sweet, or sugar corn; cabbage, lettuce, and grapes; and unthreshed grains, straw, and forage crops, originating in the farm-products area is prohibited between June 15 and October 15, inclusive, except as to direct shipments from the point of production, namely, from the point where grown or a local packing house, to the point of destination outside of the farm-products area and under inspection and certification. The products enumerated may move interstate without restriction between October 16 and June 14, inclusive; (2) the interstate movement of soil, compost, and manure from the farm-products area is prohibited except where absolute freedom from infestation is determined by an inspector of the U. S. Department of Agriculture, or when such soil, compost, or manure has been disinfected or treated under the supervision and to the satisfaction of such inspector; (3) the interstate movement of nursery and ornamental stock, except bulbs and cut flowers, originating within the Japanese beetle area to any point outside the farm-products area, except under inspection and certification, is prohibited, on account of the Japanese beetle (*Popillia japonica*).

*United States quarantined to protect Hawaii.*—Quarantine No. 51: Regulates the movement from the United States to the Territory of Hawaii, as ships' stores or as baggage or effects of passengers or crews, of sugar cane, corn, cotton, alfalfa, and the fruits of the avocado and papaya.

*Pink bollworm.*—Quarantine No. 52, with revised rules and regulations: Prohibits the interstate movement from the regulated areas of Texas, Louisiana, and New Mexico of cotton, including all parts of the plant, seed cotton, cotton lint, linters, gin waste and all other forms of cotton lint, cottonseed, cottonseed hulls, cottonseed cake and meal, bagging and other containers of the articles enumerated, and also railway cars, boats, and other vehicles which have been used in conveying cotton and cotton products grown in such regulated areas or which are fouled with such products, farm products other than hay, farm household goods, and farm equipment, except as provided in the rules and regulations supplemental thereto, on account of the pink bollworm of cotton (*Pectinophora gossypiella* Saunders).

*Satin moth.*—Quarantine No. 53: Prohibits the interstate movement to points outside of the infested areas in New Hampshire and Massachusetts of all species or varieties of poplar and willow on account of the satin moth (*Stilpnotia salicis* L.).

*White-pine blister rust.*—Quarantine No. 54, as amended: Prohibits the movement from the State of Washington of five-leaved pines, currant and gooseberry plants, on account of the white-pine blister rust.

#### FOREIGN QUARANTINES.

*Irish potatoes.*—Quarantine No. 3: Prohibits the importation of the common or Irish potato from Newfoundland; the islands of St. Pierre and Miquelon; Great Britain, including England, Scotland, Wales, and Ireland; Germany; and Austria-Hungary, on account of the disease known as potato wart.

*Mexican fruits.*—Quarantine No. 5, as amended: Prohibits the importation of oranges, sweet limes, grapefruit, mangoes, achras sapotes, peaches, guavas, and plums from the Republic of Mexico, on account of the Mexican fruit fly.

*Five-leaved pines, Ribes, and Grossularia.*—Quarantine No. 7, as amended: Prohibits the importation from each and every country of Europe and Asia, and from the Dominion of Canada and Newfoundland, of all five-leaved pines and all species and varieties of the genera *Ribes* and *Grossularia*, on account of the white-pine blister rust.

*Cottonseed and cottonseed hulls.*—Quarantine No. 8, as amended: Prohibits the importation from any foreign locality and country, excepting only the locality of the Imperial Valley, in the State of Lower California, Mexico, of cotton seed (including seed cotton) of all species and varieties, and cottonseed hulls, on account of the pink bollworm. Cotton and cottonseed from the Imperial Valley may be entered under permit and regulation.



*Seeds of avocado or alligator pear.*—Quarantine No. 12: Prohibits the importation from Mexico and the countries of Central America of the seeds of the avocado or alligator pear on account of the avocado weevil.

*Sugar cane.*—Quarantine No. 15: Prohibits the importation from all foreign countries of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungous diseases. There are no restrictions on the entry of such materials into Hawaii and Porto Rico.

*Citrus nursery stock.*—Quarantine No. 19: Prohibits the importation from all foreign localities and countries of all citrus nursery stock, including buds, scions, and seeds, on account of the citrus canker and other dangerous citrus diseases. The term "citrus," as used in this quarantine, includes all plants belonging to the subfamily or tribe *Citrateae*.

*European pines.*—Quarantine No. 20: Prohibits, on account of the European pine-shoot moth (*Evetria buoliana*), the importation from all European countries and localities of all pines not already excluded by Quarantine No. 7.

*Indian corn or maize and related plants.*—Quarantine No. 24, as amended: Prohibits the importation from southeastern Asia (including India, Siam, Indo-China, and China), Malayan Archipelago, Australia, New Zealand, Oceania, Philippine Islands, Formosa, Japan, and adjacent islands, in the raw or unmanufactured state, of seed and all other portions of Indian corn or maize (*Zea mays* L.), and the closely related plants, including all species of Teosinte (*Euchlaena*), Job's tears (*Coix*), *Polytoca*, *Chionachne*, and *Sclerachne*, on account of the downy mildews and *Physoderma* diseases of Indian corn, except that Indian corn or maize may be imported under permit and upon compliance with the conditions prescribed in the regulations of the Secretary of Agriculture.

*Citrus fruit.*—Quarantine No. 28: Prohibits the importation from eastern and southeastern Asia (including India, Siam, Indo-China, and China), the Malayan Archipelago, the Philippine Islands, Oceania (except Australia, Tasmania, and New Zealand), Japan (including Formosa and other islands adjacent to Japan), and the Union of South Africa, of all species and varieties of citrus fruits, on account of the citrus canker, except that oranges of the mandarin class (including satsuma and tangerine varieties) may be imported under permit and upon compliance with the conditions prescribed in the regulations of the Secretary of Agriculture.

*Sweet potato and yam.*—Quarantine No. 29: Prohibits the importation for any purpose of any variety of sweet potatoes or yams (*Ipomoea batatas* and *Dioscorea* spp.) from all foreign countries and localities, on account of the sweet-potato weevils (*Cylas* spp.) and the sweet-potato scarabee (*Euscepes batatae*).

*Banana plants.*—Quarantine No. 31: Prohibits the importation for any purpose of any species or variety of banana plants (*Musa* spp.), or portions thereof, from all foreign countries and localities, on account of the banana-root borer (*Cosmopolites sordidus*). No restrictions are placed on the importation of the fruit of the banana.

*Bamboo.*—Quarantine No. 34: Prohibits the importation for any purpose of any variety of bamboo seed, plants, or cuttings thereof capable of propagation, including all genera and species of the tribe *Bambuseae*, from all foreign countries and localities, on account of dangerous plant diseases, including the bamboo smut (*Ustilago shiraiana*). This quarantine order does not apply to bamboo timber consisting of the mature dried culms or canes which are imported for fishing rods, furniture making, or other purposes, or to any kind of article manufactured from bamboo, or to bamboo shoots cooked or otherwise preserved.

*Nursery stock, plants, and seeds.*—Quarantine No. 37, with regulations, revised: Prohibits the importation of nursery stock and other plants and seeds from all foreign countries and localities, on account of certain injurious insects and fungous diseases, except as provided in the regulations. Under this quarantine the following plants and plant products may be imported without restriction: Fruits, vegetables, cereals, and other plant products imported for medicinal, food, or manufacturing purposes, and field, vegetable, and flower seeds. The entry of the following nursery stock and other plants and seeds is permitted under permit:

(1) Bulbs of the following genera: *Lilium* (lily), *Convallaria* (lily of the valley), *Hyacinthus* (hyacinth), *Tulipa* (tulip), and *Crocus*; and, for a period not exceeding three years from January 1, 1923, *Chionodoxa* (glory-of-the-snow), *Galanthus* (snowdrop), *Scilla* (squill), *Fritillaria imperialis* (crown imperial), *Fritillaria meleagris* (guinea-hen flower), *Muscari* (grape hyacinth), *Ixia*, *Eranthis* (winter aconite), and *Narcissus* (jonquil, daffodil, etc.).

- (2) Stocks, cuttings, scions, and buds of fruits for propagation.
- (3) Rose stocks for propagation, including Manetti, Multiflora, brier Rose, and Rosa Rugosa.
- (4) Nuts, including palm seeds, for propagation.
- (5) Seeds of fruit, forest, ornamental, and shade trees, seeds of deciduous and evergreen ornamental shrubs, and seeds of hardy perennial plants.

Provision is also made for the issuance of special permits under safeguards to be prescribed in such permits for the entry in limited quantities of nursery stock and other plants and seeds not covered in the preceding lists for the purpose of keeping the country supplied with new varieties and necessary propagating stock.

*Flag smut and take-all.*—Quarantine No. 39, with regulations: Prohibits the importation of seed or paddy rice from Australia, India, Japan, Italy, France, Germany, Belgium, Great Britain, Ireland, and Brazil on account of two dangerous plant diseases known as flag smut (*Urocystis tritici*) and take-all (*Ophiobolus graminis*). Wheat, oats, barley, and rye may be imported from the countries named only under permit and upon compliance with the conditions prescribed in the regulations of the Secretary of Agriculture.

*European corn borer.*—Quarantine No. 41, with regulations, revised: Prohibits the importation of the stalk and all other parts, whether used for packing or other purposes, in the raw or unmanufactured state, of Indian corn or maize, broom corn, sweet sorghums, grain sorghums, Sudan grass, Johnson grass, sugar cane, pearl millet, napier grass, teosinte, and Job's tears, from all foreign countries and localities, except as provided in the rules and regulations supplemental thereto, on account of the European corn borer (*Pyrausta nubilalis*) and other dangerous insects and plant diseases.

*Mexican corn.*—Quarantine No. 42, with regulations: Prohibits the importation of Indian corn or maize from Mexico, except as provided in the rules and regulations supplemental thereto, on account of the contamination of such corn with cottonseed more or less infested with the pink bollworm.

*Stocks, cuttings, scions, and buds of fruits.*—Quarantine No. 44: Prohibits the importation of stocks, cuttings, scions, and buds of fruits from Asia, Japan, Philippine Islands, and Oceania (including Australia and New Zealand) on account of dangerous plant diseases, including Japanese apple cankers, blister blight, and rusts, and injurious insect pests, including the oriental fruit moth, the pear fruit borer, the apple moth, etc.

*Citrus black fly.*—Quarantine No. 49, with regulations: Prohibits the importation of fruits and vegetables and of plants or portions of plants used as packing material in connection with shipments of such fruits and vegetables, or otherwise, from Cuba, the Bahamas, Jamaica, Canal Zone, Costa Rica, India, Philippine Islands, Ceylon, and Java, except as provided in the rules and regulations supplemental thereto, on account of the citrus black fly (*Aleurocanthus woglumi*).

*Seed or paddy rice.*—Quarantine No. 55: Prohibits the importation of seed or paddy rice from all foreign countries and localities on account of injurious fungous diseases of rice, including downy mildew (*Sclerospora macrocarpa*), leaf-smut (*Entyloma oryzae*), blight (*Oospira oryzae*), and glume blotch (*Melanomma glumarum*), as well as dangerous insect pests, except that such seed or paddy rice may be imported from the Republic of Mexico upon compliance with the conditions prescribed in the rules and regulations supplemental thereto. This quarantine is supplemental to Quarantine No. 39.

*Fruits and vegetables.*—Quarantine No. 56: Prohibits the importation of fruits and vegetables not already the subject of special quarantines or other restrictive orders, and of plants or portions of plants used as packing material in connection with shipments of such fruits and vegetables, from all foreign countries and localities other than the Dominion of Canada, except as provided in the rules and regulations supplemental thereto, on account of injurious insects, including fruit and melon flies (Trypetidae). Includes and supersedes Quarantine No. 49 on account of the citrus black fly.

## OTHER RESTRICTIVE ORDERS.

The regulation of the entry of nursery stock from foreign countries into the United States was specifically provided for in the plant quarantine act. The act further provides for the similar regulation of any other class of plants or plant products when the need therefor shall be determined. The entry of the plants and plant products listed below has been brought under such regulation:



*Nursery stock.*—The conditions governing the entry of nursery stock and other plants and seeds from all foreign countries and localities are indicated above under "Foreign quarantines." (See Quarantine No. 37, revised.)

*Irish potatoes.*—The importation of Irish potatoes is prohibited altogether from the countries enumerated in the potato quarantine. Potatoes may be admitted from other foreign countries under permit and in accordance with the provisions of the regulations issued under order of December 22, 1913, bringing the entry of potatoes under restriction on account of injurious potato diseases and insect pests. Importation of potatoes is now authorized from the following countries: Bermuda and the Dominion of Canada; also from the States of Chihuahua and Sonora, and the Imperial Valley of Lower California, Mexico. The regulations issued under this order have been amended so as to permit, free of any restrictions whatsoever under the plant quarantine act, the importation of potatoes from any foreign country into the Territories of Porto Rico and Hawaii for local use only and from the Dominion of Canada and Bermuda into the United States or any of its Territories or Districts.

*Avocado, or alligator pear.*—The order of February 27, 1914, prohibits the importation from Mexico and the countries of Central America of the fruits of the avocado, or alligator pear, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of the avocado weevil. Entry is permitted through the port of New York only and is limited to the large, thick-skinned variety of the avocado. The importation of the small, purple, thin-skinned variety of the fruit of the avocado and of avocado nursery stock under 18 months of age is prohibited.

*Cotton.*—The order of April 27, 1915, prohibits the importation of cotton from all foreign countries and localities, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious insects, including the pink bollworm. These regulations apply in part to cotton grown in and imported from the Imperial Valley, in the State of Lower California, Mexico.

*Cottonseed products.*—The order of June 23, 1917, prohibits the importation of cottonseed cake, meal, and all other cottonseed products, except oil, from all foreign countries, and a second order of June 23, 1917, prohibits the importation of cottonseed oil from Mexico, except under permit and in accordance with the other provisions of the regulations issued under said orders, on account of injurious insects, including the pink bollworm.

### MISCELLANEOUS REGULATIONS.

*Rules and regulations governing (1) entry for immediate export, (2) entry for immediate transportation and exportation in bond, and (3) safeguarding the arrival at a port where entry or landing is not intended of prohibited plants and plant products.*—These rules and regulations, as revised August 1, 1920, govern the unloading and transfer of cargoes and transportation in bond when it is determined that such entry can be made without involving risk to the plant cultures of the United States, and also provide for the safeguarding at a port or within the territorial waters of the United States where entry or landing is not intended of any prohibited or restricted plants and plant products.

*Rules and regulations governing the movement of plants and plant products into and out of the District of Columbia.*—These rules and regulations were promulgated August 26, 1920, under the amendment to the plant quarantine act of May 31 of that year. They provide for the regulation of the movement of plants and plant products, including nursery stock, from or into the District of Columbia and for the control of injurious plant diseases and insect pests within the said District.